

1. A material cutting apparatus comprising:
  - a feed conveyor;
  - a machine tool adjacent to the feed conveyor;
  - a shuttle vise movably disposed on the feed conveyor, the shuttle vise being adapted for clamping a workpiece on the feed conveyor when in a clamping position and moving the workpiece to a cutting position adjacent to the machine tool; and
  - an adjustable stop on the feed conveyor for continuously adjusting a distance between the stop and the shuttle vise and stopping the shuttle vise at the cutting position, wherein the adjustable stop is adapted for adjusting the distance in an amount approximately equal to movement of the shuttle vise caused by clamping the workpiece.
2. The apparatus of claim 1 further comprising:
  - an encoder adapted for generating a signal in response to the movement of the shuttle vise; and
  - an actuator for moving the adjustable stop in response to the signal.
3. The apparatus of claim 2 further comprising a controller for receiving the signal and transmitting the signal to the actuator.
4. The apparatus of claim 3 further comprising a positional sensor for sensing a position of the adjustable stop and transmitting a positional signal in response thereto to the controller.

5. The apparatus of claim 4 wherein the controller transmits a signal for varying the cutting position of the shuttle vise in response to the positional signal.

6. The apparatus of claim 1 further comprising a positional sensor adapted for sensing a position of the adjustable stop.

7. The apparatus of claim 6 wherein the positional sensor is a transducer.

8. The apparatus of claim 6 wherein the positional sensor is a switch.

9. The apparatus of claim 1 wherein the adjustable stop comprises:  
a wedge having an angled face opposite the shuttle vise; and  
an actuator for moving the wedge transversely with respect to the feed conveyor.

10. The apparatus of claim 9 wherein the actuator is characterized by a linear motion device.

11. The apparatus of claim 9 further comprising a bumper disposed on the shuttle vise and having an angled face corresponding to the angled face on the wedge, wherein movement of the wedge results in varying the distance between the face on the bumper and the face on the wedge.

12. The apparatus of claim 1 wherein the adjustable stop comprises:
  - a sleeve;
  - a shaft having an end with a face thereon directed toward the shuttle vise, the shaft being threadedly connected to the sleeve such that rotation of the shaft varies the distance between the face and the shuttle vise; and
  - a prime mover for rotating the shaft.
  
13. The apparatus of claim 12 further comprising:
  - a bumper attached to the shuttle vise and adapted for engaging the face on the end of the shaft.
  
14. The apparatus of claim 12 further comprising:
  - a first pulley connected to the shaft;
  - a second pulley connected to the prime mover; and
  - a belt interconnecting the first and second pulleys.
  
15. The apparatus of claim 12 further comprising a spring engaging the shaft and biasing the shaft longitudinally with respect to the sleeve for eliminating play in a threaded connection between the shaft and sleeve.

16. The apparatus of claim 12 further comprising:
  - a switch; and
  - a cam rotatable by the prime mover and having a cam lobe thereon for engaging the switch when the cam is in a predetermined position.
17. The apparatus of claim 16 wherein the predetermined position corresponds to a longitudinal mid-point position of the shaft.
18. The apparatus of claim 1 wherein the adjustable stop comprises:
  - an eccentric cam having a cam surface thereon directed toward the shuttle vise; and
  - an actuator for rotating the cam.
19. The apparatus of claim 18 wherein the actuator is a reversible step motor.
20. The apparatus of claim 18 wherein the apparatus further comprises a bumper attached to the shuttle vise and having a face thereon;
  - wherein, the cam surface is adapted for engagement by the face.
21. The apparatus of claim 1 wherein the machine tool is a band saw.
22. The apparatus of claim 1 further comprising an actuator for moving the adjustable stop.

23. The apparatus of claim 22 wherein the actuator is linear motion device.
24. The apparatus of claim 22 wherein the actuator is a pressure-actuated cylinder.
25. The apparatus of claim 22 wherein the actuator is connected to the stop by a screw device.
26. The apparatus of claim 22 wherein the actuator is connected to the stop by a rack and pinion gear system.
27. In a material cutting apparatus of the type in which a feed conveyor feeds a workpiece to a material cutting device adjacent to the feed conveyor, and a shuttle vise is longitudinally movably disposed on the feed conveyor and adapted for clamping the workpiece when in a clamping position and moving the workpiece to a cutting position under the material cutting device, the improvement comprising:  
a stop disposed on the feed conveyor for limiting movement of the shuttle vise toward the material cutting device, the distance between the stop and the shuttle vise being continuously adjustable in response to movement of the shuttle vise when clamping the workpiece.

28. The improvement of claim 27 further comprising:
  - an encoder adapted for generating a signal in response to the movement of the shuttle vise; and
  - an actuator for moving the stop in response to the signal.
29. The improvement of claim 27 further comprising a positional sensor adapted for sensing a position of the stop.
30. The improvement of claim 29 wherein the positional sensor is a transducer.
31. The improvement of claim 29 wherein the positional sensor is a switch.
32. The improvement of claim 27 wherein:
  - the stop comprises a wedge having an angled face opposite the shuttle vise; and
  - an actuator adapted for moving the wedge transversely with respect to the feed conveyor.
33. The improvement of claim 32 further comprising a bumper disposed on the shuttle vise and having an angled face corresponding to the angled face on the wedge, wherein movement of the wedge results in a continuous variation of the distance between the face on the bumper and the face on the wedge.

34. The improvement of claim 27 further comprising:

an actuator comprising:

    a sleeve;

    a shaft threadingly engaged with the sleeve and rotatable therein;

and

    a prime mover for rotating the shaft;

wherein:

    the stop comprises an end of the shaft directed toward the shuttle vise; and

    rotation of the shaft continuously varies the distance between the end and the shuttle vise.

35. The improvement of claim 34 further comprising a bumper attached to the shuttle vise and adapted for engaging the end of the shaft.

36. The improvement of claim 34 wherein the actuator further comprises:

    a first pulley connected to the shaft;

    a second pulley connected to the prime mover; and

    a belt interconnecting the first and second pulleys.

37. The improvement of claim 34 further comprising a spring engaging the shaft and biasing the shaft longitudinally with respect to the sleeve for eliminating play in a threaded connection between the shaft and sleeve.

38. The improvement of claim 34 further comprising:  
a switch; and  
a cam rotatable by the prime mover and having a cam lobe thereon for  
engaging the switch when the cam is in a predetermined position.

39. The improvement of claim 38 wherein, the predetermined position  
corresponds to a longitudinal mid-point position of the shaft.

40. The improvement of claim 27 wherein:  
the stop comprises an eccentric cam having a cam surface directed toward  
the shuttle vise; and  
an actuator for rotating the cam.

41. The improvement of claim 40 wherein the actuator is a reversible step motor.

42. The improvement of claim 40 wherein the apparatus further comprises a  
bumper attached to the shuttle vise and having a face thereon;  
wherein, the cam surface is adapted for engagement by the face.

43. The improvement of claim 31 wherein:
  - the material cutting apparatus is a band saw; and
  - the material cutting device is a band saw blade.
44. The apparatus of claim 27 further comprising an actuator for moving the adjustable stop.
45. The apparatus of claim 44 wherein the actuator is linear motion device.
46. The apparatus of claim 44 wherein the actuator is a pressure-actuated cylinder.
47. The apparatus of claim 44 wherein the actuator is connected to the stop by a screw device.
48. The apparatus of claim 44 wherein the actuator is connected to the stop by a rack and pinion gear system.

49. A method of cutting a workpiece comprising the steps of:

- (a) providing a cutting apparatus comprising a feed conveyor, a machine tool adjacent to the feed conveyor, a shuttle vise movably disposed on the feed conveyor and adapted for clamping the workpiece when in a clamping position and moving the workpiece to a cutting position adjacent to the machine tool, and a stop for stopping the shuttle vise at the cutting position;
- (b) detecting movement of the shuttle vise resulting from clamping the workpiece; and
- (c) adjusting the stop on the feed conveyor for compensating for the movement of the shuttle vise such that a distance between the shuttle vise and the stop remains substantially constant.

50. The method of claim 49 wherein step (c) comprises:

generating a signal in response to the movement of the shuttle device; and  
transmitting the signal to an actuator for moving the adjustable stop in  
response to the signal.

51. The method of claim 49 wherein step (c) comprises moving a wedge on  
the stop transversely with respect to the feed conveyor.

52. The method of claim 55 wherein step (c) comprises rotating a shaft  
connected to the stop.

53. The method of claim 55 wherein step (c) comprises rotating a cam such that a cam surface on the cam is moved with respect to the feed conveyor.